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II. Solution by G. B. M. ZERR, A. M., Ph. D., Texarkana, Arkansas, and the PROPOSER.

Let t = number of seconds, n = number of miles per hour.

$\therefore 5280n/3600 = 22n/15$ feet per second = speed of train. Also in t seconds train goes $30n$ feet.

$\therefore 30n/t$ = number of feet in one second.

$\therefore 30n/t = 22n/15. \therefore t = 20\frac{5}{4}$ seconds.

78. Proposed by NELSON S. RORAY, South Jersey Institute, Bridgeton, New Jersey.

Solve by pure arithmetic, no algebraic symbols: A Texan farmer owns 5169 cattle; there are 3 times as many horses as cows, plus 569, and 4 times as many cows as sheep, minus 126; how many has he of each? [From *Brooks' Higher Arithmetic*.]

Solution by G. B. M. ZERR, A. M., Ph. D., Texarkana, Arkansas, and J. C. CORBIN, Principal of Schools, Pine Bluff, Arkansas.

$5169 + 126 - 569 = 4726$ = number of cattle when there are 4 times as many cows as sheep and 3 times as many horses as cows.

Every time he takes 1 sheep, he takes 4 cows and 12 horses, or 17 in all.

\therefore he has as many lots of 1 sheep, 4 cows, 12 horses, as 17 is contained in 4726. $\therefore 4726 \div 17 = 278$.

$\therefore 278 \times 1$ = number of sheep = 278

$278 \times 4 - 126$ = number of cows = 986

$278 \times 12 + 569$ = number of horses = 3905

Total = 5169

This problem was solved with a different view of its enunciation by Frederic R. Honey, and O. S. Westcott, A. M., Sc. D., Principal North Division High School, Chicago, Illinois.

[NOTE. P. S. Berg and H. C. Wilkes should each have received credit in the last number for solving problems 75 and 76. EDITOR.]

ALGEBRA.

Conducted by J. M. COLAW, Monterey, Va. All contributions to this department should be sent to him.

SOLUTIONS OF PROBLEMS.

70. Proposed by J. A. CALDERHEAD, A. B., Professor of Mathematics in Curry University, Pittsburg, Pennsylvania.

Given $\sqrt[3]{(a+x)} + \sqrt[3]{(a-x)} = \sqrt[3]{c}$ to find x .

I. Solution by J. MARCAS BOORMAN, Consultative Mechanician, Counselor at Law, Inventor, Etc., Hewlett, Long Island, New York; EDWARD R. ROBBINS, Master in Mathematics and Physics in Lawrenceville School, Lawrenceville, New Jersey; E. L. SHERWOOD, A. M., Principal of City Schools, West Point, Mississippi; O. W. ANTHONY, M. Sc., Columbian University, Washington, D. C.; A. H. HOLMES, Brunswick, Maine; and J. SCHEFFER, A. M., Hagerstown, Maryland.

Cubing, transposing, etc.,

$$(a^2 - x^2)^{\frac{1}{2}} [(a+x)^{\frac{1}{2}} + (a-x)^{\frac{1}{2}}] = (c-2a)/3, \text{ or } (a^2 - x^2)^{\frac{1}{2}} [c^{\frac{1}{2}}] = (c-2a)/3.$$